Space Weather Forecast

Issued on Monday, 24 January 2022 at 12:54 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of G1/Minor Geomagnetic storms days 1-3 (24th-26th).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low in the past 24 hours, with a common class flare observed from a far-sided region that recently rotated over the northeast limb and onto the Earth-side. This will need further analysis as it rotates into a better view. A further small and simple region developed in the north-centre disc, whilst a larger but also simple sunspot remained inactive as it continued to move across the southern hemisphere. No Earth-directed Coronal Mass Ejections (CMEs) were observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind eased from around 400 km/s to be at mainly background levels of 300 km/s by the period's end. The associated magnetic field was weak with no notable north-south component. Geomagnetic activity remained Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles from the Sun (high energy protons) remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain very low, with one sunspot on the Earth-facing side of the sun, perhaps offering just a 5% chance of common-class flares per day.

Solar Wind / Geomagnetic Activity: There are several glancing CME arrivals possible in the forecast period, through to day 3 (26th). The fast wind from a coronal hole is also expected to arrive, most probably day 2 (25th) but with some notable uncertainty. Until the arrival of this fast wind, or any CMEs, the ambient solar wind conditions will ensure Quiet geomagnetic activity with only a slight chance of reaching Unsettled. Any enhancements, however will bring a risk of Active intervals, with a chance of G1/Minor Geomagnetic storms.

Energetic Particles / Solar Radiation: The count rate of energetic particles from the Sun (high energy protons) is forecast to remain at background levels with no solar radiation storms expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	30	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	1	1	1	1
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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